ROOT Exercise 2

Still analysing pumpkin transactions (data from ROOT Exercise 1) ...

`TTree::Draw()` can be used only for relatively simple analysis. In a general case, one wants to have a direct access to each event (here: transaction) to be able to calculate various quantities.

Analysis with TTree::MakeClass

1. Find and read documentation for `TTree::MakeClass()`
2. In ROOT interactive mode, run `TTree::MakeClass()` on `transactions` from `pumpkins_big.root`. This should produce two files: `transactions.h` and `transactions.C`. Take a look inside them.
3. Prepare a program/macro based on the class generated in the previous point. The program/macro should perform a loop over all events in the file, providing the access to all the information.
4. Which farmer had most pumpkins? How many?
5. Which farmer had the biggest pumpkin? What was its mass?
6. What is the total weight of white pumpkins?
7. How many farmers had pumpkins of all colors?
8. Which farmer has the best soil for red pumpkins (the biggest average weight of pumpkins)?

More advanced analysis

9. What is the distribution of average pumpkin weight from each farmer (among all farmers)?
10. What is the distribution (among all farmers) of standard deviation of green pumpkin weights (calculated among all green pumpkins of the given farmer)?
11. What is the distribution of average weight of orange pumpkins among farmers that had at least ten pumpkins of each color?
12. What is the distribution of mass of yellow pumpkins? Fit a Gaussian function to each of the peaks. What are the means and widths of all peaks?
13. Consider correlations between average weight of pumpkins of different colors. Which colors are correlated?